

**LAND NORTH OF CAWSTON LANE, RUGBY,
WARWICKSHIRE**

Report on Archaeological Geophysical Survey 2011

A. Bartlett

Surveyed by:

Bartlett-Clark Consultancy

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for:

**CgMs Consulting
43 Temple Row,
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Land North of Cawston Road, Rugby

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Introduction

This geophysical was undertaken to investigate the nature and extent of archaeological remains at a proposed development site near Rugby. The survey was commissioned from Bartlett Clark Consultancy, Specialists in Archaeogeophysics of Oxford, by the Birmingham office of CgMs Consulting. Fieldwork for the survey was done on 25-27 October 2011.

The Site

Location and Description

The site extends across two fields to the south of the A4071 at Cawston, c. 3km south west of the centre of Rugby. The land is currently in arable use, and was under young rape and cereal crops at the time of the survey. The total evaluation area, as indicated by red cross hatching on figure 1, amounts to 11.2ha.

The site is on a bedrock of early Jurassic Lias, and appears to be free of drift deposits, although glacial sands and gravels are present nearby. Previous surveys at comparable sites have shown that soils on this bedrock are usually highly responsive to magnetometer surveying, and clearly defined archaeological features can often be detected.

Archaeological Background

There is evidence from previous investigations that archaeological features are likely to be present both within and adjacent to the present evaluation area, although details of their density and extent remain to be clarified by the survey findings. CgMs have supplied us with a copy of an aerial photographic interpretation of the site (reproduced here as an inset in figure 5). This shows a complex system of ditched enclosures and probable settlement features extending across the northern part of the evaluation area, as well as the adjoining field to the west. The plan additionally shows a number of partly extant earthworks indicating the site of the Cawston deserted Medieval village (SMR 4144) outside the evaluation area in the field north of Lime Tree Village (as marked in green on the inset plan). Findings from a previous excavation on the line of a water main across this site included a number of enclosures, ditches and structures. Earthworks from this site may extend to the north east to within the present evaluation area.

Survey procedure

The method used for the geophysical survey was a full recorded magnetometer survey supplemented by background magnetic susceptibility testing.

Magnetometer survey

Readings for the magnetometer survey were collected using Bartington 1m fluxgate magnetometers, and are plotted at 25cm intervals along transects 1m apart. The results of the survey are shown as a grey scale plot at 1:2000 scale in figure 2, and as a graphical (x-y trace) plot in two parts at 1:1250 in figures 3-4. The grey scale and graphical plots display the detected magnetic anomalies in plan and profile respectively. The x-y plots represent the readings after minimal pre-processing operations. These include adjustment for irregularities in line spacing caused by heading errors (direction sensitivity in the instrument zero setting), and truncation of extreme values. The grey scale plots show a processed version after additional low pass filtering to control background noise levels.

The magnetometer responds to cut features such as ditches and pits when they are silted with topsoil, which usually has a higher magnetic susceptibility than the underlying natural subsoil. It also detects the thermoremanent magnetism of fired materials, notably baked clay structures such as kilns or hearths, and so responds preferentially to the presence of ancient settlement or industrial remains. The readings are also strongly affected by ferrous and other debris of recent origin.

Magnetic susceptibility survey

We usually supplement a magnetometer survey with background magnetic susceptibility readings, which in this case were taken at 30m intervals, using a Bartington MS2 meter with a field detector loop. Susceptibility measurements can provide a broad indication of areas in which archaeological debris, and particularly burnt material associated with past human activity, has become dispersed in the soil. They are also affected by non-archaeological factors, including geology, past and present land use, and modern disturbances, and so provide evidence relating to soil and site conditions which can be of help in interpreting the magnetometer survey. The results are presented as a shaded plot of the initial readings inset in figure 5.

The susceptibility readings in this case were found to be particularly high (in the range 80- <100 SI) across the cropmark site in the northern field. This is consistent with the geological conditions, and also provides further evidence for the presence of dense settlement remains.

Presentation

An interpretation of the findings is shown superimposed on the graphical plots (figures 3-4), and is reproduced separately to provide a summary of the findings in figure 5. Features of potential archaeological significance are marked in red. Broken lines are used to indicate features which may be visible in the grey scale plot, but which are too weak or discontinuous to be outlined in detail.

A few weaker magnetic anomalies of possibly natural or non-archaeological origin are outlined in light brown. Probable recent or non-archaeological disturbances are indicated in a darker brown and ferrous debris in blue. Apparent cultivation effects are indicated in green.

Survey location

The survey was located by reference to a temporary site grid which was set out and tied to national grid co-ordinates (to c. 10cm accuracy) by means of a differential GPS system. OS co-ordinates of map locations can be read from the AutoCAD 2008 version of the plans which can be supplied with this report.

Results

There is a clear contrast in the survey response between the cropmark site in the north and west of the evaluation area and the remainder of the site. Features detected in the western half of the northern field include a dense complex of mainly rectilinear enclosures and related features, which together suggest a settlement site of probably Romano-British date.

Within the enclosures there are several areas of strong magnetic activity (as marked by red cross hatching on figure 5) in which the magnetic anomalies are too concentrated to be outlined individually in the interpretation. These disturbances are likely to indicate the presence of occupation debris which may include burnt material from hearths or kilns. The exceptionally strong magnetic anomalies (visible particularly in the graphical plot) around the location labelled A on figure 5 could perhaps indicate that this part of the site was used for industrial activity (pottery or metal working). Magnetic susceptibility readings are also particularly high in this area.

The north eastern part of the site is less densely disturbed, but also contains clearly defined archaeological features. These include additional rectilinear and curving enclosure ditches, but also a number of circular features (visible in the grey scale plot). These are likely to be hut circles, perhaps suggesting a settlement of rather earlier date than in the west of the field. There is a particularly clear and isolated probable round house at B, and a cluster of superimposed circles at C. Some of the larger enclosures detected in all parts of this field can be identified in the cropmark plan, but there are differences of detail between the cropmarks and survey. [Features from the inset cropmark plan have been traced in grey for comparison with the survey findings in the main plan on figure 5.]

A parallel pattern of linear cultivation markings is visible in the grey scale plot (as indicated by broken green lines on figure 5), and is superimposed on other archaeological findings across the field. This could indicate the presence of traces of ridge and furrow, or could result from more recent ploughing.

A further weak linear marking (shown in blue at D) is visible in the grey scale plot, and is probably a non-ferrous pipe. (It appears to be located a little to the west of the previously excavated water pipe mentioned above.)

A strong continuous magnetic anomaly is likely to represent a steel-reinforced (sewer ?) pipe at E. There may be some weak indications of further enclosures (or medieval earthworks) near to this pipe at F, but comparable features appear to be lacking from the remainder of the survey. Findings from the remainder of the site include a strong irregular linear disturbance suggesting a ditch or drain on the line of a former field boundary, and

filled with recent debris at G. There could be a similar feature, or perhaps an isolated length of pipe, to the east of the survey at H, and an iron pipe at J. A few individual magnetic anomalies which could represent silted pits have been indicated in red towards the east of the survey, but (with the possible exception of some stronger examples at K) they are too weak and isolated to suggest the presence of significant concentrations of archaeological features.

Conclusions

The survey has produced findings which are broadly consistent with the cropmark evidence, and has confirmed the presence of a dense complex of enclosures and settlement remains in the field adjacent to the A4071. These findings suggest a site of earlier date than the medieval village excavated in the field north of Lime Tree Village, but it is possible that the (relatively sparse) findings around F (and perhaps K) could indicate an eastward continuation of the medieval site. The survey has not produced clear evidence for the presence of any other significant concentrations of archaeological features in the eastern half of the evaluation area.

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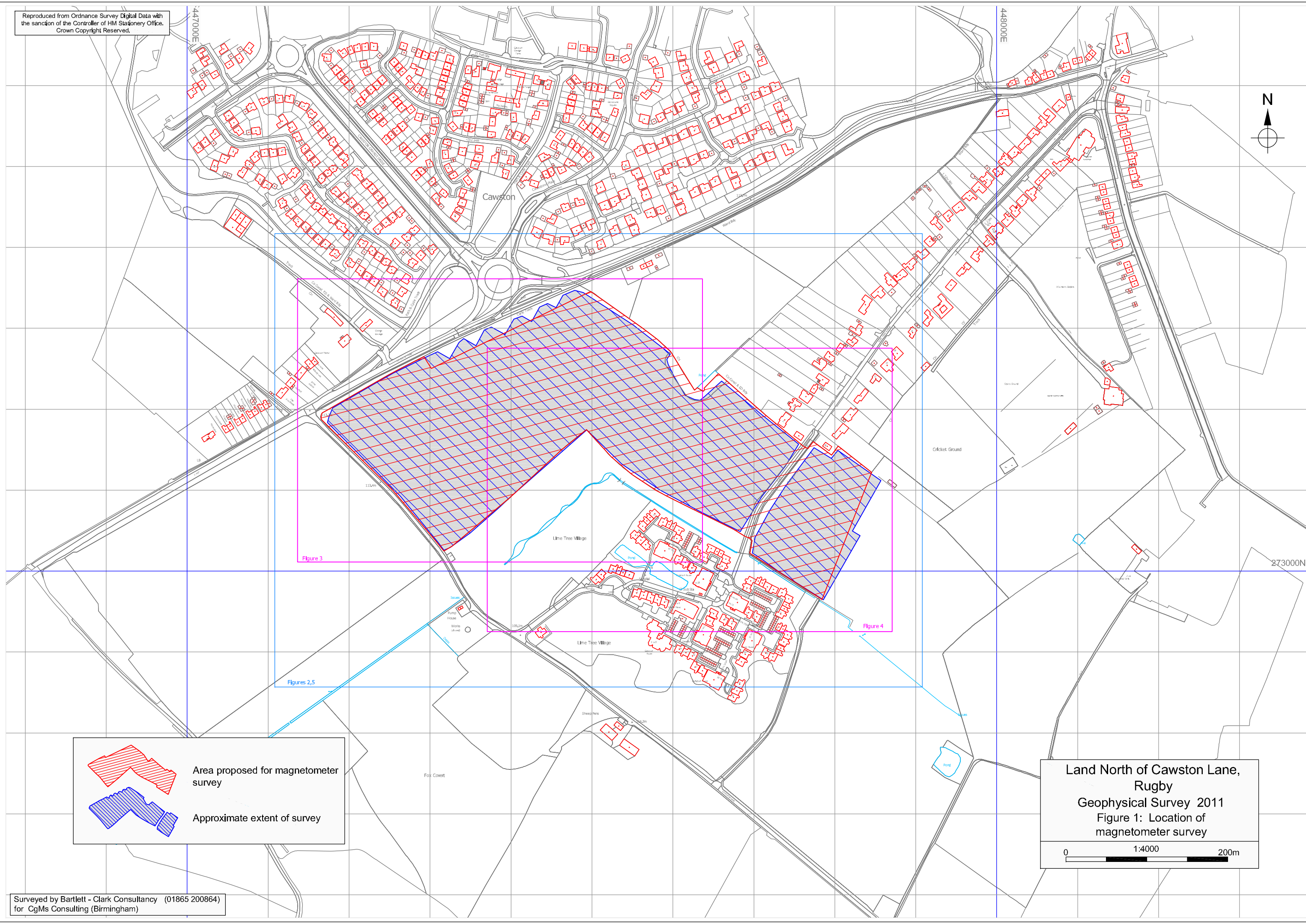
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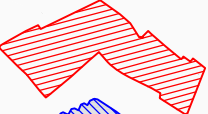
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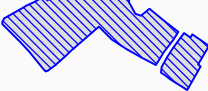
30 November 2011

The fieldwork and data processing for this project were done by F. Prince and C. Oatley.

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 Area proposed for magnetometer survey

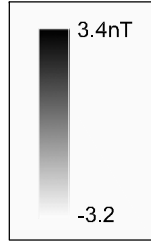
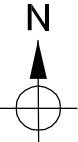
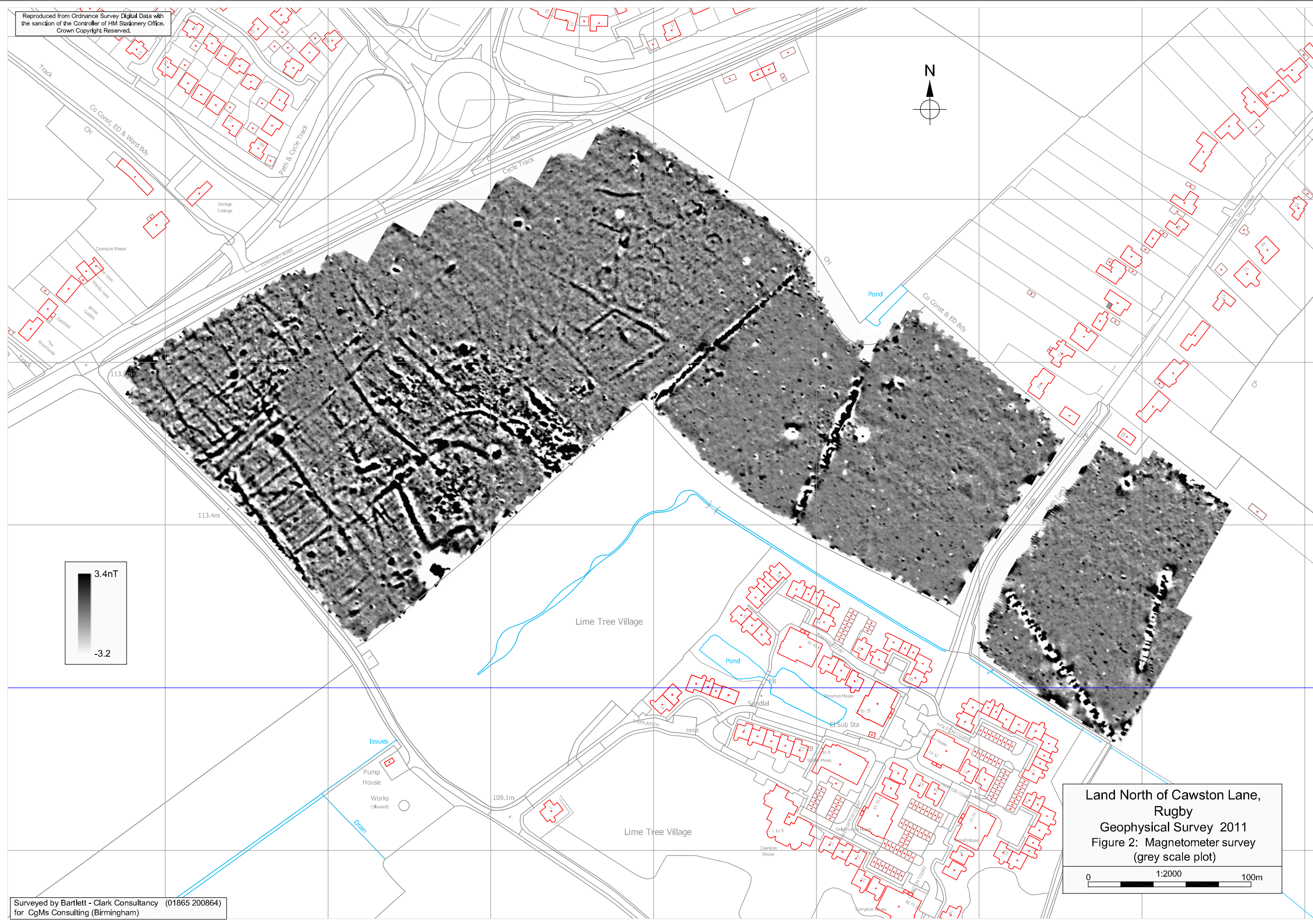
 Approximate extent of survey

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Figure 1: Location of
magnetometer survey

0 1:4000 200m

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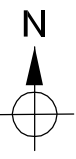
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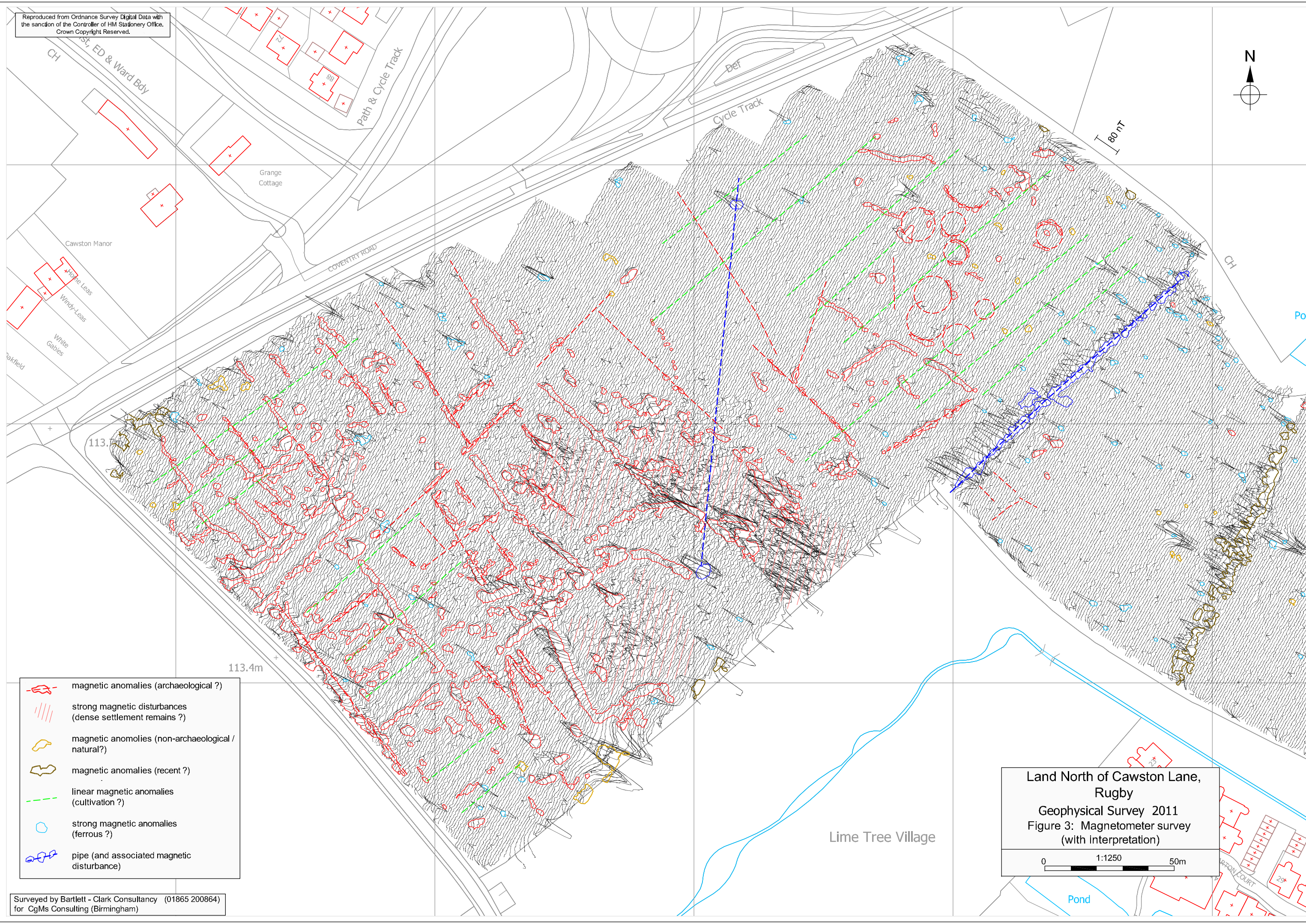
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Figure 2: Magnetometer survey
(grey scale plot)








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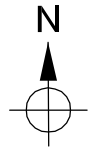
-  magnetic anomalies (archaeological ?)
-  strong magnetic disturbances (dense settlement remains ?)
-  magnetic anomalies (non-archaeological / natural?)
-  magnetic anomalies (recent ?)
-  linear magnetic anomalies (cultivation ?)
-  strong magnetic anomalies (ferrous ?)
-  pipe (and associated magnetic disturbance)

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Figure 3: Magnetometer survey
(with interpretation)

0 1:1250 50m

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- magnetic anomalies (archaeological ?)
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- linear magnetic anomalies (cultivation ?)
- strong magnetic anomalies (ferrous ?)
- pipe (and associated magnetic disturbance)

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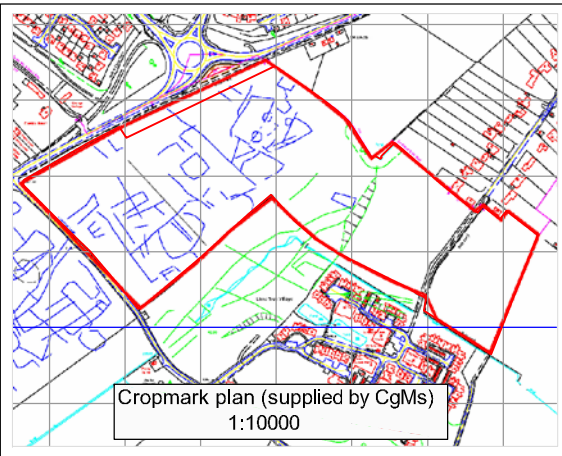
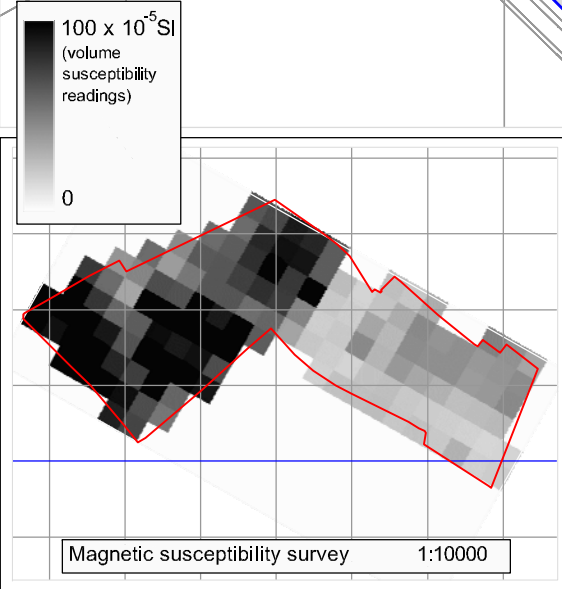
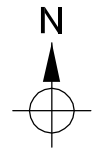
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Rugby
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Figure 4: Magnetometer survey
(with interpretation)

0 1:1250 50m

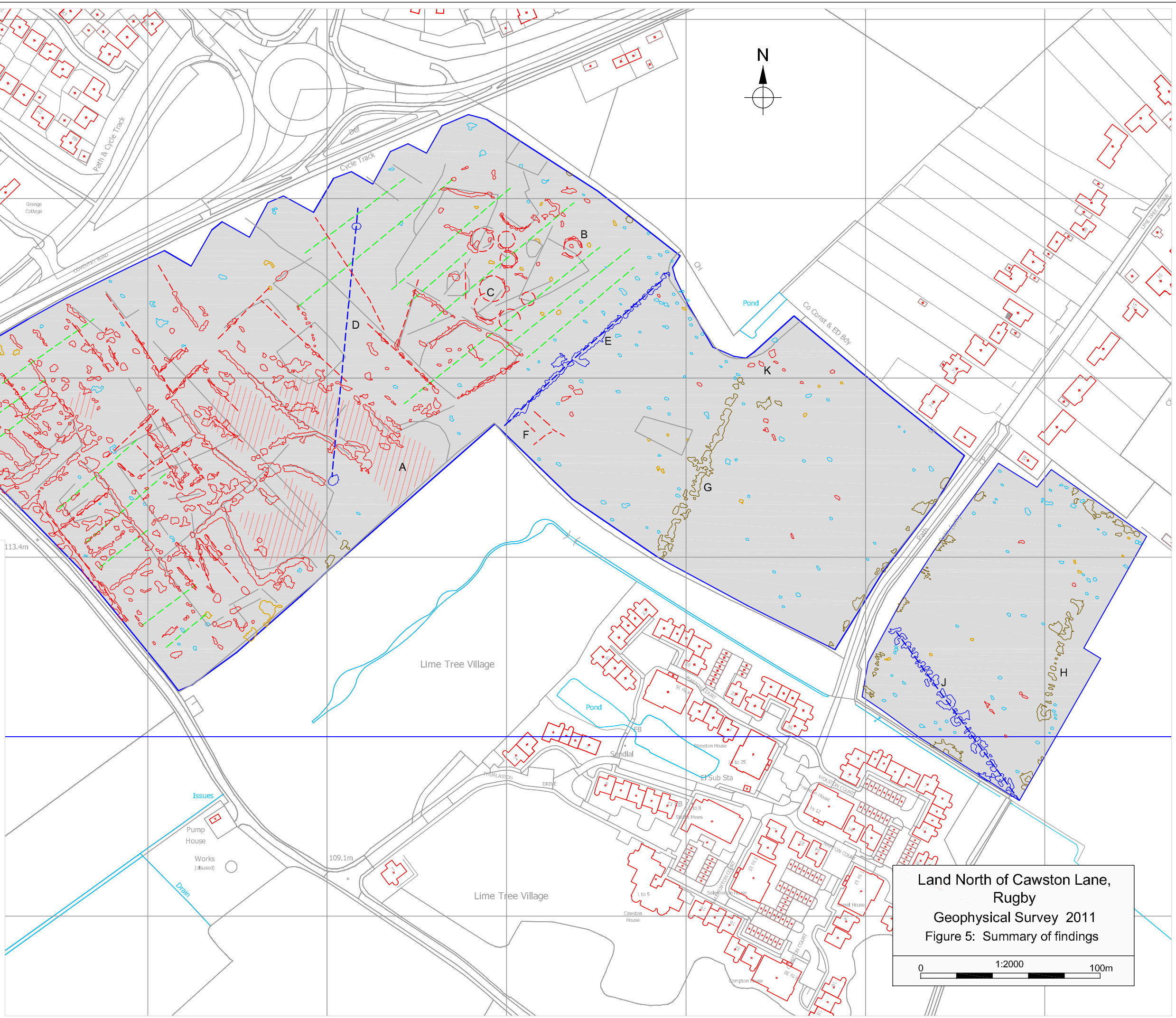
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- magnetic anomalies (archaeological ?)
- strong magnetic disturbances (dense settlement remains ?)
- magnetic anomalies (non-archaeological / natural?)
- magnetic anomalies (recent ?)
- linear magnetic anomalies (cultivation ?)
- strong magnetic anomalies (ferrous ?)
- pipe (and associated magnetic disturbance)
- cropmarks (traced from CgMs plan)



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Figure 5: Summary of findings

